

The OSCILLATOR

Volume 28 Issue 5
May 2005

Oregon Tualatin Valley
Amateur Radio Club

Since 1978

The Oregon Tualatin Valley Amateur Radio Club is a special service club related to ARRL: The National Association for Amateur Radio. We seek to advance the Amateur Radio Service through:

- ⇒ Education and Training of new and licensed amateurs
- ⇒ Public Service and Emergency communication
- ⇒ Hobby nets, contests and meetings
- ⇒ Social events

Membership is available to anyone interested in amateur radio. A license is not required.

CLUB Meeting - Wednesday, May 11

The centennial celebration of Albert Einstein's "miraculous year" takes place this year with the World Year of Physics 2005. The World Year is sponsored by the American Physical Society.

How have the theoretical proposals of Albert Einstein affected science and the world in which we live? Dr. Tevian Dray, professor of Mathematics at Oregon State University, comes to bring this

subject to light for us (no pun intended).

We meet on the second Wednesday of each month at the Beaverton Elks' Club, 3500 SW 104th Ave, Beaverton. Our meetings open at 7:00 pm and the program is on by 7:45 pm. See you on May 11th.

Guests are welcome.

Bring young hams and prospects to this meeting.

KK7TN PARAGRAPHS Don Stettler KK7TN



OTVARC is the prime sponsor of SEA-PAC. Most of you know this but it will be news to some. An OTVARC committee led by members provides leadership for SEA-PAC planning and execution. Other clubs provide support -- OTVARC is the club with its neck

out. Please support SEA-PAC by your registration and attendance June 17th - 19th. It is vital that you do, and you'll have a good time! The Early Bird deadline is May 14.

Field Day is on June 25th - 26th, the weekend after SEA-PAC. Join in the fun. Verne, W7GRN, has volunteered to take the lead this year. Offer him your support. You can talk to Verne most

anytime on the club's 146.96 repeater.

It has been a good month for me. One thing I managed was for the first time to successfully communicate using the PSK-31 digital mode. It is very satisfying to have the report that I had a good signal. I also talked to my German ham radio friend on 2 meters. Guenter can connect to one the area's repeaters using the internet so we agreed on a time when I'd be listening.

After communicating for 8 years using packet and email we have finally actually talked to one another. What a nice experience. This is the magic of ham radio for me.

73
Don

CLUB INFORMATION

Amateur Radio Exam Sessions

Volunteer Examiners, members of OTVARC, provide at least six exam sessions each year. Sessions are under the direction of Carl Clawson WS7L.

This year, exams are Saturdays:

- June 18 (SEA-PAC) • August 6
- October 1 • December 3

Regular sessions are 1:00 pm at Ronler Acres Fire Station across from Hillsboro Stadium on Evergreen Parkway. The SEA-PAC session is 9:00 am at Our Saviour's Lutheran Church, across from the Convention Center.

Pre-register for the exams by contacting Carl, WS7L, at ws7l@arrl.net or by phone at 503.629.5796.

Happy May Birthday

- 1 Don Branda N7DDK
- 5 Jim Graffy AE7W
- 6 George Bates K7GWB
- 8 Kevin Bersch KE7VIN
- Robbin Heath KD7MRU
- 14 Barb Bailey KA7WTF
- 16 Willy Lund KC7ICQ
- 18 Wally Boleen KC7TB
- 19 Jim Shires KD7LDR
- 23 Patricia Rickman N7UUD
- Kevin Curry KA7KYQ
- 24 Stephen Coan KA7MOW
- 25 Donald Copeland W7DPV
- 26 Sue Dauntless KB7RHH
- Richard Morgan KD7GIE
- 28 Barry Carlson W7BLC
- 30 Joel Simmons KE7ANV

HAMFests

17 - 19 June 2005

SEA-PAC '05

Seaside, Oregon

Earlybird Registration Due: May 14th

Online (printable) registration available.

<http://www.seapac.org>

Box 25466

Portland OR 97298-0466

Will Sheffield N7THL

n7thl@arrl.net

TRAVELERS'

The TRAVELERS' head to Sunnyside County Park at Foster Lake, May 20-22. Sunnyside Park is near Sweethome (take Highway 20 through Sweethome, watch for Quartzville Road, left to the Park). Tom and Barb Bailey are wagonmasters. Contact them at 503.538.2266.

Sunnyside Park features a boat ramp, fishing, and a country atmosphere. Sites have electric and water hookups. A dump station is available. You do not have to be the owner of an RV to participate.

The June event takes TRAVELERS' to Anderson Park, Vernonia, June 24-26 for Field Day.



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LUNCH BUNCH

Saturday May 21

1:00 pm

Lunch Bunch
Cactus Jack's

4342 SW Beaverton Hillsdale Hwy

Questions?

Linda Sutton KC7YTD

kb7pvw@arrl.net or 503.246.8879

Public Service Events

Rose Festival/Life Works Duathlon

Sunday, May 22, 2005

Volunteers still needed...call:

Alan Chinnock KB7POR

503-636-2237 or kb7por@aol.com

Jim Schaeffer KB7ADH at 503-245-2518

Capacitors, from Page 4

Finally, capacitors exhibit a curious behavior called "dielectric absorption," or "DA." The capacitor acts as though it has a memory; when a charge is placed on the capacitor, then removed, an echo of the charge can reappear on the plates as if by magic. This can lead to audible problems, including smeared bass notes and the muddled rhythms.

Capacitors come in two flavors: electrolytic and everything else. Electrolytic capacitors are very efficient—they pack a lot of capacitance into a small space, compared to other types. Unfortunately, they also pack a lot of dielectric absorption, ESR, and leakages so they need to be used with discretion in audio circuits.

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Wes Allen, K7WWG President
665 SW 167th Ave. 503-531-4081
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FIELD DAY AT VERNONIA

Save June 25-26! We'll set up at Anderson Park, Vernonia, site of our '04 Field Day effort. Verne Smith W7GRN and Dave Hart KD7ZFK will join forces with Washington County ARES for a joint Field Day effort.



Anderson Park offers hookups for those who bring RVs. Field Day begins on-the-air Saturday, June 25th at 11:00 am (1800 UTC). It runs through Sunday, June 26th at 1:00 pm (2100 UTC).

The object of Field Day is to work as many stations as possible on any and all amateur bands (excluding the 60, 30, 17, and 12-meter bands) and in doing so to learn to operate in abnormal situations in less than optimal conditions. A premium is placed on developing skills to meet the challenges of emergency preparedness as well as to acquaint the general public with the capabilities of Amateur Radio.

Last year we learned to select HF antennas that helped us deal with local high voltage electric distribution lines.

Sign up to operate one or more stations at Field Day. It's fun for all!



NORTHWESTERN DIVISION CONVENTION

June 17, 18 & 19, 2005

Seaside Oregon

MEET OUR SPEAKER

The World Year of Physics 2005 is a United Nations endorsed international celebration of physics. The World Year of Physics 2005 is bringing the excitement of physics to the general public, inspiring a new generation of scientists.

Timed to coincide with the centennial celebration of Albert Einstein's "miraculous year" the World Year of Physics comes to OTVARC on May 11th. Dr. Tevian Dray, professor of Math at Oregon State University, Corvallis is our speaker. Dr. Dray comes through the 100th Anniversary celebration of Einstein's prime period of discovery and thought. His topic will be Einstein's impact on science (and by reference on the development of theories underlying RADIO and propagation of radio signals).

Dr. Dray comes to us courtesy of Oregon State University and the American Physical Society. Learn more at:
www.physics2005.org

ARRL Executive Committee: Bandwidth

Acting on the premise that amateur bands must flexibly and comfortably accommodate present and future operating modes and technologies, the ARRL Executive Committee reached consensus on recommendations to the ARRL Board of Directors for a regulation-by-bandwidth proposal. The panel adopted recommendations that will form the basis of a draft ARRL petition to the FCC. The proposals remain only EC recommendations at this point and go to the full board.

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Capacitors, by Paul J. Stamler

From reading circuit design texts, one would think that a capacitor is just a capacitor and that different types are interchangeable in practical use. In fact this isn't so; capacitors differ drastically in engineering performance, and their sonic impact varies too. Capacitors ("caps" for short) don't act like pure capacitance; at high frequencies, capacitors exhibit inductive behavior, so their impedance actually rises with increasing frequency; a pure capacitor's impedance would fall. At the transition frequency where the device changes from capacitive to inductive behavior, there is a minimum impedance that can be thought of as a resistance in series with the capacitor. This is called the "equivalent series resistance," or ESR, of the capacitor. In any application, but especially in power supply capacitors, the lower ESR units perform better.

Capacitors leak. In theory, a capacitor blocks all DC and passes only AC (including audio). In practice, however, a capacitor will pass some direct current; some types, such as film capacitors, pass almost none, while many electrolytics leak a lot. (Incidentally, most power supply caps leak a great deal when the piece of equipment is first turned on; they stabilize after about 30 minutes, and leak less. This is one of the reasons equipment sounds better after it's been warmed up.) Replacing capacitors with low-leakage units is always a good idea. [See Capacitors, P 3]

LOOKING BACK A CENTURY: WHO IS ALBERT EINSTEIN?

In 1907, Albert Einstein published a short formula in the *Annalen der Physics* that looked insignificant but was in retrospect the most important of his life, $E = mc^2$. It means that the energy of a body is equal to its inertial mass. He completed this work two years previous, a period of time which is being celebrated now, a hundred years later. It was his "miracle period."

For some decades, nobody understood what it really meant. In 1939, Otto Hahn, Lise Meitner and, Fritz Strassmann and coworkers developed the concept of nuclear energy in controlling the chain reaction of a small quantity of heavy and fissile atoms, like plutonium (Pu-239) or uranium (U-235). They asked Einstein and Szilard to solve some technical problems. Their idea was to create a free and powerful energy capable of powering the world for centuries. It was a good idea, and probably even the best that man has ever had, but as usually military didn't consider the same applications.

In 1895 Einstein failed an examination that would have allowed him to study for a diploma as an electrical engineer at the Eidgenössische Technische Hochschule (ETH) in Zurich. However, he graduated from ETH in 1900 as a teacher in mathematics and physics. He wanted to find a position teaching at university level. He failed to do so. A series of temporary positions teaching math in private schools were unsatisfying. In 1901 he wrote in his journal that he had given up ever getting to the university.

His friend and class mate Marcel Grossman's father tried to help get a job for him by recommending him to the director of the patent office in Bern. Einstein was appointed as a technical expert third class. He worked in the patent office from 1902 to 1909, holding a temporary post but by 1904 the position was made permanent. In 1906 he was promoted to technical expert second class.

While in the Bern patent office he completed an astonishing range of theoretical physics publications, written in his spare time without the benefit of close contact with scientific literature or colleagues. These were his "miracle years." He achieved a doctorate in physics from the University of Zurich in 1905. His thesis was *On a new determination of molecular dimensions*.

Einstein wrote three papers in 1905. In the first, Einstein examined the phenomenon discovered by Max Planck, according to which electromagnetic energy seemed to be emitted from radiating objects in discrete quantities. The energy of these quanta was directly proportional to the frequency of the radiation. This seemed to contradict classical electromagnetic theory, based on Maxwell's equations and the laws of thermodynamics. These assumed that electromagnetic energy consisted of waves which could contain any small amount of energy. Einstein used Planck's quantum hypothesis to describe the electromagnetic radiation of light.

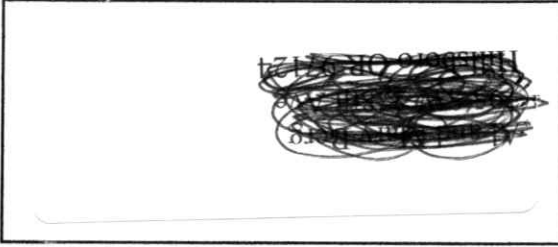
His second 1905 paper proposed what is we call the special theory of relativity. He based his theory on a reinterpretation of the classical principle of relativity, that the laws of physics had to have the same form in any frame of reference. As a second fundamental hypothesis, Einstein assumed that the speed of light remained constant in all frames of reference, as required by Maxwell's theory. He followed up by showing how mass and energy were equivalent.

The third paper concerned statistical mechanics.

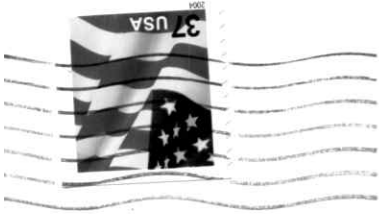
He received the Nobel in Mathematics in 1921, following Max Planck in 1918. Albert Einstein marked the 20th century with his thinking. He died 18 April 1955 and his ashes were sprinkled at an undisclosed location.

CLUB MEETING
MAY 11TH

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